

CLAIMS

1. A swivel joint (11) for a construction machine, comprising a body (12) rotating together with a swing structure (71, 1), and a spindle (13) mounted to a travel structure (70, 2) and rotatably inserted in said body, said swivel joint being provided with a plurality of first tubes (21) connected to said body and a plurality of second tubes (23) connected to said spindle, said plurality of first tubes and said plurality of second tubes being communicated with each other through a plurality of circumferential grooves (41) formed in an inner peripheral surface of said body and an outer peripheral surface of said spindle and through a plurality of axial passages (45) formed inside said spindle such that said plurality of first tubes and said plurality of second tubes are coupled to each other in a relatively rotatable manner,

wherein said plurality of first tubes (21) are connected to an upper end surface (12a) of said body (12) in concentrated layout.

2. The swivel joint for the construction machine according to Claim 1,

wherein said body (12) has thicker wall portions (31, 32) in sidewalls (12b, 12c) thereof, a plurality of axial passages (33, 34) communicating with said plurality of circumferential grooves (41) are formed inside said thicker wall portions, said plurality of axial passages being opened at the upper end surface (12a) of said body to provide a

plurality of ports (35, 36), and said plurality of first tubes (21) are connected to said plurality of ports.

3. The swivel joint for the construction machine according to Claim 1,

wherein the upper end surface (12a) of said body (12) is positioned above a main frame (1) constituting a bottom portion of said swing structure (71), and said plurality of first tubes (21) are connected to said plurality of ports (35, 36) at a position higher than a bottom surface of said main frame (1).

4. A construction machine comprising a lower travel structure, an upper swing structure, and a swivel joint for coupling a plurality of tubes for communication between hydraulic equipment, including a valve apparatus, disposed on said upper swing structure and hydraulic equipment disposed on said lower travel structure in a relatively rotatable manner,

wherein said swivel joint comprises a body (12) rotating together with said upper swing structure (71, 1), and a spindle (13) mounted to said lower travel structure (70, 2) and rotatably inserted in said body,

said plurality of tubes for communication include a plurality of first tubes (21) connected to said body and a plurality of second tubes (23) connected to said spindle, said plurality of first tubes (21) and said plurality of second tubes (23) being communicated with each other through a plurality of circumferential grooves (41) formed in an inner peripheral surface of said body and an outer

peripheral surface of said spindle and through a plurality of axial passages (45) formed inside said spindle, and

said plurality of first tubes (21) are connected to an upper end surface (12a) of said body (12) in concentrated layout.

5. The construction machine according to Claim 4,

wherein said body (12) has thicker wall portions (31, 32) in sidewalls (12b, 12c) thereof, a plurality of axial passages (33, 34) communicating with said plurality of circumferential grooves (41) are formed inside said thicker wall portions, said plurality of axial passages being opened at the upper end surface (12a) of said body to provide a plurality of ports (35, 36), and said plurality of first tubes (21) are connected to said plurality of ports.

6. The construction machine according to Claim 4,

wherein the upper end surface (12a) of said body (12) is positioned above a main frame (1) constituting a bottom portion of said swing structure (71), and said plurality of first tubes (21) are connected to said plurality of ports (35, 36) at a position higher than a bottom surface of said main frame (1).